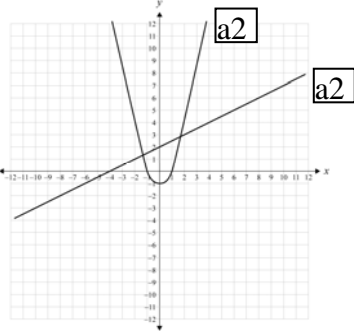
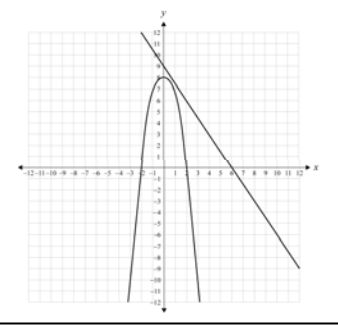
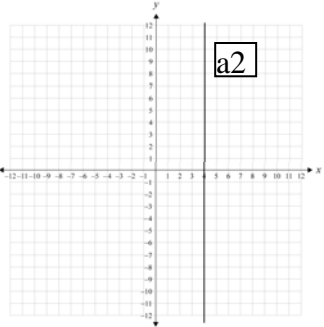


Assessment Schedule – 2009**Mathematics: Sketch and interpret graphs (90148)****Evidence Statement**

Question	Achievement	Achievement with Merit	Achievement with Excellence	
	Sketch, and interpret features of, graphs.	Sketch, and interpret features of, graphs.	Determine and apply an appropriate model for a situation involving graphs.	
ONE (a)(i)	THREE of: Cat, Tasmanian Devil, Pouch Lion, Tiger. a1			A = 2 of: 1(ai), 1(b), 1(aii) M = 1(c) or 1(aii) Merit evidence E = M + 1(d)
(a)(ii)	Only ONE measurement is correctly commented on, eg: EITHER “same skull length” OR “different skull width”. a1	They have different skull width, but the same skull length (or equivalent statement).		
(b)	$\frac{90}{15} = 6$ hours (no units = OK; incorrect units = MEI) a1			
(c)	1.2 metres	Width of drain = $6.8 - 5.6 - 1.2$ metres Width of drain cover = $1.2 + 2 \times 0.7 = 1.2 + 1.4 = 2.6$ metres		
(d)			Want eq of form $y = -kx(x - 9)$ $= -k(x - 4.5)^2 + 2$ $k = 0.0988... \approx 0.1$ or $\frac{8}{81}$ or $\frac{2}{20.25}$ etc so get, for example: $y =$ $\frac{-8}{81}(x - 4.5)^2 + 2$ OR $y = -0.099x(x - 9)$ OR $y = -0.099x^2 + 0.89x$ etc	

<p>TWO</p> <p>(a)</p> <p>(b)</p>	 <p>General shape and any key features shown are correct: Eg straight line, gradient $\frac{1}{2}$, y-intercept 2, x-intercept -4 and Parabola, vertex $(0, -1)$, x-intercepts ± 1</p>	 <p>General shape and any key features shown are correct: Eg 2(c) Straight line, gradient $-\frac{3}{2}$, y-intercept 9, x-intercept 6 and 2(d) Parabola, vertex $(0, 8)$, x-intercepts ± 2</p>	<p>2(e) Find current vertex: $x = 1, y = -16$ → New vertex is $(-2, 4)$</p> <p>Therefore the new equation is :</p> <p>$y = (x + 2)^2 + 4$ OR $y = (x + 6)(x - 2) + 20$ OR $y = x^2 + 4x + 8$</p> <p>and y-intercept is 8 **see below</p>	<p>A = 2(a) or 2(b)</p> <p>M = 2(c) or 2(d)</p> <p>E = M + 2(e)</p>
<p>THREE</p> <p>(a)</p>				<p>A = 3(a) and 3(c)(i)</p> <p>M = 1 of: 3(b)(i) and 3(b)(ii)</p> <p>E = M + 3(c)(ii)</p>
<p>(b)(i)</p> <p>(b)(ii)</p>		<p>$y = -0.75x$ or $y = -\frac{3}{4}x$ or $4y + 3x = 0$</p> <p>$y = 0.8x + 4$ or $y = \frac{4}{5}x + 4$ or $5y - 4x = 20$</p> <p>MUST be an equation (accept use of other variables).</p> <p>Replacement evidence: 1d, 2e, 3cii</p>		
<p>(c)(i)</p>	<p>Solve $0 = -x^2 + 1.69$ to get $x = 1.3$ Width → 2.6 metres</p>	<p>a1</p>		

(c)(ii)		Correct substitution in their model, of $x = 1.5$ m , that gives a sensible (< 2) answer is OK for “m”.	$y = -ax^2 + 2$ using (2,0) $\rightarrow a = 0.5$ $\rightarrow y = -0.5x^2 + 2$ OR $y = -0.5(x + 2)(x - 2)$ Use $x = 1.5$ to get $y = 0.875$ m Height of rail 0.875 m **see below	
Sufficiency	A A Judgement of <u>three</u> part-questions at “a”-level: with at least one of “a1” and one of “a2”. Evidence for “a1”: 1aii, 1c, 1d Evidence for “a2”: 2c, 2d, 2e	minimum of: MMM ie MMM and any arrangement of MME all give overall grade of M A correct equation for the model that is in any code “e” part-question, is evidence for “m” in Question 3. (That evidence cannot be used as both “m” and “e”.)	minimum of E E ie EEE and any arrangement of EEM , EEA , EEN all give overall grade of E ** The two “e” part-questions that give EE , must involve correctly finding TWO models and correctly using at least one model. Ie if merit requirements are met and: two models are correct , but only one of them is correctly used , the other gets code “eH” and the overall grade is “E”.	

Judgement Statement — 2009

Achievement	Achievement with Merit	Achievement with Excellence
Sketch and interpret features of graphs. <div>2 A</div> With at least 1 A1 and 1 A2 across the questions	Sketch and interpret features of graphs. Write equations for linear graphs. <div>3 M or higher</div>	Determine and apply an appropriate model for a situation involving graphs. <div>2 E</div>

Lower case **a**, **m**, **e** may be used throughout the paper to indicate contributing evidence for overall grades for questions. The circled upper case **A**, **M** and **E** grades shown at the end of each full question are used to make the final judgement.

The following Mathematics-specific marking conventions may also have been used when marking this paper:

- Errors are circled.
- Omissions are indicated by a caret (^).
- **NS** may have been used when there was not sufficient evidence to award a grade.
- **CON** may have been used to indicate 'consistency' where an answer is obtained using a prior, but incorrect answer and **NC** if the answer is not consistent with wrong working.
- **CAO** is used when the 'correct answer only' is given and the assessment schedule indicates that more evidence was required.
- **#** may have been used when a correct answer is obtained but then further (unnecessary) working results in an incorrect final answer being offered.
- **RAWW** indicates right answer, wrong working.
- **R** for 'rounding error' and **PR** for 'premature rounding' resulting in a significant round-off error in the answer (if the question required evidence for rounding).
- **U** for incorrect or omitted units (if the question required evidence for units).
- **MEI** may have been used to indicate where a minor error has been made and ignored.